

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application.

Listing of Claims:

1. (Currently Amended) A nucleic acid molecule that comprises or that encodes, in 5' to 3' order, a first region of interest, a first base-paired region, a loop region, and a second base-paired region, wherein said first and second base-paired regions ~~are base-paired~~ are capable of base-pairing to each other ~~or are base-paired to each other~~.
2. (Currently Amended) The nucleic acid molecule of claim 1, further comprising a second region of interest downstream of said second base-paired region, wherein said first and second regions of interest ~~are base-paired~~ are capable of base-pairing to each other ~~or are base-paired to each other~~.
3. (Original) The nucleic acid molecule of claim 2, wherein said first and second regions of interest differ in length.
4. (Original) The nucleic acid molecule of claim 2, wherein said first region of interest has substantial identity to a region of a target gene and said second region of interest has substantial complementarity to said target gene, and wherein said nucleic acid molecule inhibits expression of said target gene in a cell.
5. (Original) The nucleic acid molecule of claim 4, wherein said first region of interest has substantial identity to a region of two or more target genes, and said second region of interest has substantial complementarity to said region of said two or more target genes, and wherein said nucleic acid molecule inhibits expression of said two or more target genes in a cell.
6. (Original) The nucleic acid molecule of claim 1, wherein said nucleic acid molecule comprises deoxyribonucleotides, ribonucleotides, or a mixture thereof.

7. (Original) The nucleic acid molecule of claim 4, wherein said target gene is a nucleic acid molecule associated with a disease or disorder, a bacterial infection, a viral infection, a yeast infection, or double-stranded ribonucleic acid (dsRNA)-mediated toxicity, or encodes a bacterial polypeptide, a viral polypeptide, a yeast polypeptide, a polypeptide associated with a disease or disorder, or a polypeptide associated with double-stranded ribonucleic acid (dsRNA)-mediated toxicity.

8. (Original) The nucleic acid molecule of claim 7, wherein said polypeptide associated with a disease or a disorder is a cancer-causing polypeptide.

9. (Cancelled)

10. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-9~~ ~~claim 1~~, wherein said first region of interest is at least 1 to 1000 nucleotides.

11. (Currently Amended) The nucleic acid molecule of claim 2, wherein said first and second base-paired regions are complementary to each other and not to said target gene ~~The nucleic acid molecule of any of preceding claims 1-10, wherein said first region of interest is at least 1 to 400 nucleotides.~~

12-15 (Cancelled)

16. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-15~~ ~~claim 10~~, wherein said first region of interest is at least 19 to 26 nucleotides.

17. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-15~~ ~~claim 10~~, wherein said first region of interest is at least 15 to 25 nucleotides.

18. (Cancelled)

19. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 2-18~~ ~~claim 2~~, wherein said second region of interest is at least 1 to 1000 nucleotides.

20-24 (Cancelled)

25. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 2-24~~ ~~claim 19~~, wherein said second region of interest is at least 19 to 26 nucleotides.

26. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 2-24~~ ~~claim 19~~, wherein said second region of interest is at least 15 to 25 nucleotides.

27-32 (Cancelled)

33. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-32~~ ~~claim 1~~, wherein said first base-paired region is at least 1 to 50 nucleotides.

34-35 (Cancelled)

36. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-33~~ ~~claim 33~~, wherein said first base-paired region is at least 5 to 15 nucleotides.

37-41 (Cancelled)

42. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-41~~ ~~claim 1~~, wherein said second base-paired region is at least 1 to 50 nucleotides.

43-44 (Cancelled)

45. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-42~~ claim 42, wherein said second base-paired region is at least 5 to 15 nucleotides.

46. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-45~~ claim 1, wherein said first and second base-paired regions are the same length. ~~loop region is at least 1 to 1000 nucleotides~~

47-53 (Cancelled)

54. (Currently Amended) The nucleic acid molecule of ~~any of preceding claims 1-51~~ claim 1, wherein said loop region is at least 5 to 15 nucleotides.

55. (Original) A pharmaceutical composition comprising the nucleic acid molecule of claim 1 and a pharmaceutically acceptable carrier or diluent.

56. (Currently Amended) A pharmaceutical composition comprising a vector DNA plasmid construct that ~~encodes the nucleic acid molecule of any of preceding claims 1-54~~, wherein said nucleic acid molecule comprises comprising, at the 5' end, a promoter that is operably linked to a said nucleic acid molecule and which enables transcription of said nucleic acid molecule, ~~and~~ wherein said nucleic acid molecule encodes, in 5' to 3' order, a first region of interest, a first base-paired region, a loop region, and a second base-paired region, wherein said first and second base-paired regions ~~are base-paired~~ are capable of base-pairing to each other, and wherein transcription of said nucleic acid molecule produces a an RNA hairpin.

57. (Currently Amended) A method for generating an RNA hairpin comprising transcribing ~~the~~ a nucleic acid molecule of ~~any of preceding claims 1-54~~ in a host cell that has been transformed with said nucleic acid molecule, wherein said nucleic acid molecule comprises, at the 5' end, a promoter that is operably linked to said nucleic acid molecule and which enables

transcription of said nucleic acid molecule, and wherein said nucleic acid molecule encodes, in 5' to 3' order, a first region of interest, a first base-paired region, a loop region, and a second base-paired region, wherein said first and second base-paired regions are capable of base-pairing ~~are base-paired~~ to each other, wherein transcription of said nucleic acid molecule produces a an RNA hairpin.

58. (Currently Amended) The method of claim 57, wherein said nucleic acid molecule further encodes a second region of interest downstream of said second base-paired region, wherein said first and second regions of interest are capable of base-pairing ~~base paired~~ to each other.

59. (Currently Amended) The method of claim 58, wherein the 5' end of said RNA hairpin comprising the first region of interest and the 3' end of said RNA hairpin comprising the second region of interest are base-paired and partially overlap to form a partial RNA hairpin having a non-overlapping region, wherein the 5' end of said first region of interest extends beyond the 3' end of said second region of interest.

60. (Currently Amended) The method of claim 58, wherein the 5' end of said RNA hairpin comprising the first region of interest and the 3' end of said RNA hairpin comprising the second region of interest are base-paired and partially overlap to form a partial RNA hairpin having a non-overlapping region, wherein the 3' end of said second region of interest extends beyond the 5' end of said first region of interest.

61. (Original) The method of claim 59, wherein said non-overlapping region of said partial RNA hairpin is extended *in vivo* by an RNA-dependent RNA polymerase.

62. (Original) The method of claim 61, wherein said RNA-dependent RNA polymerase is endogenous to said host cell.

63. (Original) The method of claim 61, wherein said RNA-dependent RNA polymerase is exogenous to said host cell and is provided to said host cell.

64. (Currently Amended) A method for inhibiting the expression of a target gene in a cell, said method comprising administering to a subject in need thereof, a the nucleic acid molecule ~~of any of preceding claims 1-54~~ that comprises or that encodes an RNA hairpin, wherein said RNA hairpin comprises, in 5' to 3' order, a first region of interest, a first base-paired region, a loop region, a second base-paired region, and a second region of interest, wherein said first and second base-paired regions are capable of base-pairing to each other or are base-paired to each other, and wherein said administering inhibits or reduces expression of a target gene, relative to expression of said target gene in a subject not administered said nucleic acid molecule.

65. (Original) The method of claim 64, wherein said first and second regions of interest are the same or different lengths.

66. (Currently Amended) The method of claim 65, wherein the 5' end of said RNA hairpin comprising the first region of interest and the 3' end of said RNA hairpin comprising the second region of interest are base-paired and partially overlap to form a partial RNA hairpin having a non-overlapping region, wherein the 5' end of said first region of interest extends beyond the 3' end of said second region of interest.

67. (Currently Amended) The method of claim 65, wherein the 5' end of said RNA hairpin comprising the first region of interest and the 3' end of said RNA hairpin comprising the second region of interest are base-paired and partially overlap to form a partial RNA hairpin having a non-overlapping region, wherein the 3' end of said second region of interest extends beyond the 5' end of said first region of interest.

68. (Original) The method of claim 66, wherein said non-overlapping region of said partial RNA hairpin is extended *in vivo* by an RNA-dependent RNA polymerase.

69. (Original) The method of claim 68, wherein said RNA-dependent RNA polymerase is endogenous to said host cell.

70. (Original) The method of claim 68, wherein said RNA-dependent RNA polymerase is exogenous to said host cell and is provided to said host cell.

71. (Original) The method of claim 64, wherein said first region of interest has substantial identity to a region of said target gene and said second region of interest has substantial complementarity to said target gene, and wherein said nucleic acid molecule inhibits expression of said target gene in a cell of said subject.

72. (Currently Amended) The method of claim 71, wherein said first region of interest has substantial identify identity to a region of two or more target genes, and said second region of interest has substantial complementarity to said region of said two or more target genes, and wherein said nucleic acid molecule inhibits expression of said two or more target genes in a cell of said subject.

73. (Original) The method of claim 71, wherein said target gene is a nucleic acid molecule associated with a disease or disorder, a bacterial infection, a viral infection, a yeast infection, or double-stranded ribonucleic acid (dsRNA)-mediated toxicity, or encodes a bacterial polypeptide, a viral polypeptide, a yeast polypeptide, a polypeptide associated with a disease or disorder, or a polypeptide associated with double-stranded ribonucleic acid (dsRNA)-mediated toxicity.

74. (Original) The method of claim 73, wherein said polypeptide associated with a disease or a disorder is a cancer-causing polypeptide.

75. (Currently Amended) The nucleic acid molecule of claim 64, wherein said first and

second base-paired regions are complementary to each other and not to said target gene The method of claim 73, wherein said polypeptide associated with dsRNA mediated toxicity is a RNA dependent protein kinase (PKR) polypeptide or an interferon response associated polypeptide.

76. (Currently Amended) The method of claim 64, wherein inhibiting the expression of said target gene is used to treat, stabilize, or prevent infection in an animal A method for treating or preventing infection, said method comprising administering to a subject in need thereof, the a nucleic acid molecule of any of preceding claims 1-54 that comprises or that encodes an RNA hairpin, wherein said RNA hairpin comprises, in 5' to 3' order, a first region of interest, a first base paired region, a loop region, a second base paired region, and a second region of interest, wherein said first and second base paired regions are base paired to each other, and wherein said administering inhibits or reduces expression of a target gene, relative to expression of said target gene in a subject not administered said nucleic acid molecule, wherein said target gene is a bacterial, viral, or yeast gene that encodes a polypeptide required for infection, replication, pathogenesis, or survival of said bacteria, virus, or yeast in said subject.

77-87 (Cancelled)

88. (Currently Amended) The method of claim 64, wherein inhibiting the expression of said target gene is used to treat or prevent cancer A method for treating or preventing cancer, said method comprising administering to a subject in need thereof, an effective amount of a nucleic acid molecule that comprises or that encodes a RNA hairpin, wherein said RNA hairpin comprises, in 5' to 3' order, a first region of interest, a first base paired region, a loop region, a second base paired region, and a second region of interest, wherein said first and second base paired regions are base paired to each other, and wherein said administering inhibits or reduces expression of a target gene, relative to expression of said target gene in a subject not administered said nucleic acid molecule, and wherein said target gene encodes a polypeptide required for proliferation, maintenance, or survival of a cancer causing cell.

89-116 (Cancelled)